WHAT IS CLAIMED IS:

1. A hydraulic brake apparatus for a vehicle comprising:

pressure generating means for generating hydraulic pressure in response to operation of a manually operated braking member;

a wheel brake cylinder operatively mounted on a wheel of said vehicle for applying braking force to said wheel with the hydraulic pressure fed from said pressure generating means;

a reservoir for storing brake fluid; and

pressure regulating means disposed between said pressure generating means and said wheel brake cylinder, and connected with said reservoir, wherein said pressure regulating means regulates the hydraulic pressure fed into said wheel brake cylinder to provide a desired pressure less than the hydraulic pressure generated by said pressure generating means, and wherein said pressure regulating means including;

a linear proportioning solenoid valve for selectively communicating said wheel brake cylinder with one of said reservoir and said pressure generating means, to regulate a pressure difference between the hydraulic pressure output from said pressure generating means and the hydraulic pressure fed into said wheel brake cylinder, into a desired value in response to electromagnetic force exerted by said linear proportioning solenoid valve, and

pressure difference limiting means for blocking the communication between said wheel brake cylinder and said reservoir, and communicating said pressure generating means with said wheel brake cylinder, when the pressure difference between the hydraulic pressure output from said pressure generating means and the hydraulic pressure fed into said wheel brake cylinder is equal to or greater than a predetermined value.

2. A hydraulic brake apparatus as set forth in claim 1, wherein said linear proportioning solenoid valve comprises;

a valve member with opposite ends thereof applied with the hydraulic pressure output from said pressure generating means and the hydraulic pressure fed into said wheel brake cylinder, respectively, and

an electromagnetic actuator for actuating said valve member, and

wherein said pressure difference limiting means is disposed between said valve member and said actuator, and provided with an elastic member for holding said valve member and said actuator spaced apart from each other by a predetermined distance to be moved in a body, and compressed in response to increase of the pressure difference when the pressure difference is equal to or greater than the predetermined value, so that when the pressure difference is equal to or greater than the predetermined value, said valve member is moved together with said elastic member in response to increase of the pressure difference, to block

the communication between said wheel brake cylinder and said reservoir, and to allow the hydraulic pressure supplied from said pressure generating means to said wheel brake cylinder through said valve member.

3. A hydraulic brake apparatus for a vehicle comprising:

a pressure source for generating hydraulic pressure;

a pressure regulator valve for regulating the hydraulic pressure generated by said pressure source in response to operation of a manually operated braking member;

a wheel brake cylinder operatively mounted on a wheel of said vehicle for applying braking force to said wheel with the hydraulic pressure fed from said pressure regulator valve;

a reservoir for storing brake fluid; and

pressure regulating means disposed between said pressure regulator valve and said wheel brake cylinder, and connected with said reservoir, wherein said pressure regulating means regulates the hydraulic pressure fed into said wheel brake cylinder to provide a desired pressure less than the hydraulic pressure generated by said pressure regulator valve, and wherein said pressure regulating means including;

a linear proportioning solenoid valve for selectively communicating said wheel brake cylinder with one of said reservoir and said pressure regulator valve, to

regulate a pressure difference between the hydraulic pressure output from said pressure regulator valve and the hydraulic pressure fed into said wheel brake cylinder, into a desired value in response to electromagnetic force exerted by said linear proportioning solenoid valve, and

pressure difference limiting means for blocking the communication between said wheel brake cylinder and said reservoir, and communicating said pressure regulator valve with said wheel brake cylinder, when the pressure difference between the hydraulic pressure output from said pressure regulator valve and the hydraulic pressure fed into said wheel brake cylinder is equal to or greater than a predetermined value.

4. A hydraulic brake apparatus as set forth in claim 3, wherein said linear proportioning solenoid valve comprises;

a valve member with opposite ends thereof applied with the hydraulic pressure output from said pressure regulator valve and the hydraulic pressure fed into said wheel brake cylinder, respectively, and

an electromagnetic actuator for actuating said valve member, and

wherein said pressure difference limiting means is disposed between said valve member and said actuator, and provided with an elastic member for holding said valve member and said actuator spaced apart from each other by a predetermined distance to be moved in a body, and compressed in response to increase of the pressure difference when the

pressure difference is equal to or greater than the predetermined value, so that when the pressure difference is equal to or greater than the predetermined value, said valve member is moved together with said elastic member in response to increase of the pressure difference, to block the communication between said wheel brake cylinder and said reservoir, and to allow the hydraulic pressure supplied from said pressure regulator valve to said wheel brake cylinder through said valve member.

5. A hydraulic brake apparatus for a vehicle comprising:

a pressure source for generating hydraulic pressure;

a pressure regulator valve for regulating the hydraulic pressure generated by said pressure source in response to operation of a manually operated braking member;

a master cylinder having a pressure chamber for receiving therein the hydraulic pressure fed from said pressure regulator valve, and a master piston actuated by the hydraulic pressure in said pressure chamber to discharge hydraulic braking pressure;

a wheel brake cylinder operatively mounted on a wheel of said vehicle for applying braking force to said wheel with the hydraulic braking pressure fed from said master cylinder;

a reservoir for storing brake fluid; and

pressure regulating means disposed between said

pressure regulator valve and said pressure chamber, and connected with said reservoir, wherein said pressure regulating means regulates the hydraulic braking pressure fed into said pressure chamber to provide a desired pressure less than the hydraulic braking pressure generated by said pressure regulator valve, and wherein said pressure regulating means including;

a linear proportioning solenoid valve for selectively communicating said pressure chamber with one of said reservoir and said pressure regulator valve, to regulate a pressure difference between the hydraulic pressure output from said pressure regulator valve and the hydraulic pressure fed into said pressure chamber, into a desired value in response to electromagnetic force exerted by said linear proportioning solenoid valve, and

pressure difference limiting means for blocking the communication between said pressure chamber and said reservoir, and communicating said pressure regulator valve with said pressure chamber, when the pressure difference between the hydraulic pressure output from said pressure regulator valve and the hydraulic pressure fed into said pressure chamber is equal to or greater than a predetermined value.

6. A hydraulic brake apparatus as set forth in claim 5, wherein said linear proportioning solenoid valve comprises;

a valve member with opposite ends thereof applied with the hydraulic pressure output from said pressure

regulator valve and the hydraulic pressure fed into said pressure chamber, respectively, and

an electromagnetic actuator for actuating said valve member, and

wherein said pressure difference limiting means is disposed between said valve member and said actuator, and provided with an elastic member for holding said valve member and said actuator spaced apart from each other by a predetermined distance to be moved in a body, and compressed in response to increase of the pressure difference when the pressure difference is equal to or greater than the predetermined value, so that when the pressure difference is equal to or greater than the predetermined value, said valve member is moved together with said elastic member in response to increase of the pressure difference, to block the communication between said pressure chamber and said reservoir, and to allow the hydraulic pressure supplied from said pressure regulator valve to said pressure chamber through said valve member.

7. A hydraulic brake apparatus as set forth in claim 1, wherein said pressure generating means is a tandem master cylinder for generating hydraulic pressure in response to operation of said manually operated braking member to supply the hydraulic pressure to wheel brake cylinders operatively mounted on wheels of said vehicle through a couple of hydraulic circuits, respectively.

8. A hydraulic brake apparatus as set forth in claim 7,

wherein said linear proportioning solenoid valve is disposed in each of said hydraulic circuits, and comprises;

a valve member with opposite ends thereof applied with the hydraulic pressure output from said tandem master cylinder and the hydraulic pressure fed into said wheel brake cylinders, respectively, and

an electromagnetic actuator for actuating said valve member, and

wherein said pressure difference limiting means is disposed between said valve member and said actuator, and provided with an elastic member for holding said valve member and said actuator spaced apart from each other by a predetermined distance to be moved in a body, and compressed in response to increase of the pressure difference when the pressure difference is equal to or greater than the predetermined value, so that when the pressure difference is equal to or greater than the predetermined value, said valve member is moved together with said elastic member in response to increase of the pressure difference, to block the communication between said wheel brake cylinders and said reservoir, and to allow the hydraulic pressure supplied from said tandem master cylinder to said wheel brake cylinders through said valve member.